

that the North Devon cattle "do not possess any particular qualities as stock animals for the grazier or feeder;" and in reference to the Hereford cattle, says: "They are seldom met with out of their native district; and . . . it is doubtful whether the partiality they have succeeded in exciting with some persons does not arise from unjustified preference." Rarely, if ever, has any writer upon agriculture expressed views on this subject with less judicial care than has been shown in these quotations. The Shorthorns, which are evidently the author's favourites, have undoubted merits and many staunch advocates, but they have no monopoly of those good qualities which distinguish our improved breeds of cattle; and thus throughout the world Herefords and Devons become competitors with the Shorthorns, and in many cases successful competitors.

The Fifth Section includes "the Drainage of Land, Irrigation, and Manures." The action of burnt lime in the soil is probably as commonly understood by those who have given any attention to the use of manures as the action of any one of our fertilisers. Instead of giving any distinct and useful information upon the subject the author contents himself by such explanations as the following:—"Upon sandy soils, which seldom abound to any considerable extent in vegetable matter, the mechanical action of the ('burnt') lime is to combine with the finer particles of the soil and thus give additional consistence to the staple of the land; attracting the moisture from the atmosphere, it causes it to be less liable to be hurt by drought in those seasons when the crops suffer so greatly upon sandy soils, exercising a cooling influence upon hot land, although the lime itself be hot and of a warm nature to a cold soil. Upon these dry soils, however, it is necessary to give liberal dressings of putrescent manures, for seeds could obtain no nourishment from either the lime or the sand."

Here then we have an extraordinary mixture of ideas, arising from the action of burnt lime being confused with lime which has not been burnt, as, for instance, when chalk or marl has been used. The author is fully sensible of the important influences of manures, for he remarks: "The whole subject of the proper application of manure is one of the most important departments of successful husbandry, as is generally acknowledged, yet, unfortunately, in only too many instances is it one that is very much neglected beyond the most ordinary system of 'rule of thumb,' followed according to the 'custom of the country' which may prevail in each shire." Surely no stronger plea could have been advanced for the author giving his readers some clear explanation of the action of various manures, so as to aid them in exercising their thoughts on the subject, rather than simply following "the custom of the country." In this respect the work is certainly very defective.

The Sixth Section deals with "the Labourer, Root-Growing, and Hops." Of the various suggestions given for the benefit of the labourer, the author certainly deserves credit for one novelty. He proposes that, "instead of allowing the men to keep pigs themselves, let the smallest out of a litter be given to each man as they come round—not the smallest pig that is born, for this particular pig would be found to thrive in a mysterious manner, so that he overtook and beat all the others—but the smallest when

they are killed or sold. By this means all the pigs will make equal progress, and an arrangement of this kind will cause an extraordinary amount of interest in the various kinds of stock." We may certainly take it for granted that none of the labourers on the farm would have any objection to such an arrangement, but it is by no means equally obvious how the men who are attending to the horses, or engaged on the land, can contribute to the welfare of the pigs, except by contributions of corn intended for the horses, or by supplies of nettles from the hedgerows.

With curious inconsistency the author almost immediately after, in noticing the importance of a supply of milk, remarks, "The milk should be sold at a cheap rate, *not given*, so that the independence and self-respect of the labourer is preserved." In this latter recommendation we cordially agree; but is the larger gift of a pig of such a thoroughly substantial and consolatory character as to prevent any loss of self-respect? It would doubtless be a matter of rare occurrence, but however frequent it might be, if the master should find it consistent with the pleasure and profit of farming, the labourers would probably not complain at their independence being thus far overlooked. It is undoubtedly desirable to promote feelings of independence and self-respect amongst labourers, but we fail to detect in this section any indications of a definite policy likely to lead to this result.

The chapter on the growth of Hops is the most valuable of the entire series, and is quite a redeeming feature in the work. Nor must it be supposed that other parts of the several sections are devoid of merit; on the contrary, the work contains many valuable statements, which manifestly come from a mind practically acquainted with some of the subjects brought under consideration. It is however much to be regretted that these grains of good corn have not been more perfectly winnowed, so as to present a purer and more marketable sample to the public.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

Mr. A. R. Wallace's "Australasia"

ALTHOUGH somewhat late in the day, I beg to offer a few remarks on this work supplementary to the critique which appeared in the columns of NATURE, vol. xx. p. 598. The facts that "Australasia" is the only compendious work which we have in English on the subject of which it treats, and that the high authority of Mr. Wallace's name will be equivalent with the majority of readers to a guarantee for the accuracy of the maps and letter-press, render it important that such errors as exist in the book should be rectified at once. For this reason I venture to make the following brief observations on those sections of the work treating of the Philippines and Borneo, with which districts I chance to be personally familiar.

1. In the map of the Philippines the islands of Sulu and Balabac, and the halves of the islands of Palawan and Mindanac, are shown as Mahometan native states, whereas they are all as undoubtedly Spanish possessions as is the interior of Luzon. In Barilan the Spanish have long had a naval station and arsenal; at Port Royalist they have a naval station and penal settlement; and the same at Balabac; and they have within the last few years firmly possessed themselves of the chief Sulu island. They

have also the settlements of Pollok and Cota Batu in Ilana Bay. The whole of the above-named places are in regular steam-communication with Manila.

2. In the map of the Malay Archipelago the geography of the north-west coast of Borneo is so inaccurate as to be quite valueless. The great Rejang River should run to near the head of the Koti, and therefore the Sarawak Territory be prolonged much further eastwards. The Limbang is brought down far into the Sarawak territory; and the Baram, a river nearly as large as the Rejang (up which I have myself steamed 200 miles), is entirely omitted. The Brunei Territory should extend as far as Marudu Bay. All the old errors in nomenclature which have long been corrected appear afresh. Considering Mr. Wallace's local knowledge, it is surprising that he should have inserted a map of Borneo which is quite the most inaccurate as regards the physical geography of the island of any that have come under my notice.

3. In the summary of the mammalian fauna of the Philippines (p. 272) only three species of insectivora are enumerated, the two quite distinct species of *Tupaia* inhabiting Palawan and Mindanao respectively being unnoticed. Speaking of the avifauna (p. 273), Mr. Wallace mentions the absence of pheasants as one of its negative characteristics—but he includes the Palawan group in the Philippines, and this group has *Polyplectron*. Mr. Wallace also states that there are deer in Palawan. It would be interesting to know on what authority this statement is made, for I believe that Dr. Steere and myself are the only naturalists who have visited Palawan, and to myself both Spaniards and natives strenuously denied that any kind of deer existed on the island. With regard to the observation that the Malayan indigenes have more or less frizzled hair (p. 293), I may remark that the only tribe with which I came in contact—the Tagbenúa of Port Royalist—were straight-haired. I inquired about a Negrito race, but could hear nothing of any in that part of Palawan. The Spanish capital of Palawan and residence of the Governor is Puerto Princesa (Port Royalist of our charts), not the older settlement of Taitay (p. 274).

4. Tibang Mountain in Borneo (p. 349) is by common report of the natives the source of the Rejang, Kapuas, Banjar-Masin, and Koti rivers. It is said to have a *white* summit. The rhinoceros (p. 354) is by no means confined to the head of the Koti river. It is quite common on the east coast of Borneo, in the Kinabatangan valley especially, and is found also in the upper waters of the Kapuas and Rejang. Wild cattle can hardly be said to be confined to the northern part of the island. They abound in the Upper Rejang, are found on the shore near Bintulu, and have been seen as far west as Batang Lupar. There are possibly two species. They are certainly *not* the descendants of Spanish cattle, though these exist, and they may have interbred locally. At p. 356 Mr. Wallace writes: "The Dusun or Idään tribes—the Kanowits and Pakatans—correspond to the Land-Dyaks of Sarawak, while the Milanows correspond to the Sea-Dyaks." This is a most extraordinary statement. Dusuns, Kanowits, and Land-Dyaks may correspond to one another—though this has yet to be demonstrated—but there are radical differences in language, customs, and physical characters between Milanows and Sea-Dyaks as between any two tribes in North-west Borneo. Pakatan, by the way, should be written Bakatan (*bukit*, a hill).

5. I add a few notes on the Appendix. The Balow Dyaks (p. 629) people the Lower Batang, Lupar, and Liŋga rivers. There are only a few immigrants in Simunjon. The Sea-Dyaks of Borneo (p. 634) are clearly distinct from the Kayan tribes, as much so as they are from Milanows, who are related to the Kayans. The Sea-Dyaks have within the last thirty years become the dominant race of North-west Borneo, but the Kayan tribes seem to be decaying. The correct spelling of Ilanun (p. 637) is, I believe, Irānun (cf. Maludu = Marudu). It is worthy of note (p. 638) that the indigenes of Basilan style themselves Jakuns. The Idään (p. 647) inhabit the vicinity of Kina Balu, but the Muruts the Padas and Limbang rivers, with intervening districts inland.

Papan, North Borneo

A. HART EVERETT

Nicholson's Palæontology, 2nd Edition, 1879

MAY I ask the favour of your inserting in NATURE the following remarks on the second edition of Prof. Nicholson's "Manual of Palæontology," which has but lately reached us in India.

First of all, I desire to express my sense of the obligations which are undoubtedly due by all palæontologists to Prof. Nicholson for the amount of labour which he must have expended

in bringing together such an amount of facts as are contained in the work before us. Such a labour can be only fully appreciated by those who have experienced the difficulty of keeping pace with the discoveries even in one branch of the subject.

In a work like the "Manual" there must, almost inevitably, be many sins of omission, and some of commission, and it is accordingly with a full sense of the difficulties of Prof. Nicholson's task before me that I venture to point out certain errors and omissions in the part devoted to the palæontology of the vertebrata, and more especially in regard to India.

In his preface Prof. Nicholson observes that the greater part of the work was written in the early part of the year 1878, and consequently that his readers must not expect to find notices of discoveries made after that date. No one can, of course, take exception to that statement, but there are to be found in the text numerous omissions not covered by this saving clause, as will be seen from the following instances:—

The first point I have to notice is in relation to the Siwalik rocks of India. It was surely due to Prof. Nicholson's readers to know that those who had most recently studied the newer tertiaries of India were of opinion that the Siwaliks are in great part of pliocene, and the Narbuda rocks of pleistocene, age. Whenever Prof. Nicholson alludes to the latter, they are termed pliocene, while the former, except in two places, are termed upper miocene. I may add that these newer views as to the age of the rocks in question were published in India as far back as 1876.

Again, whenever any reference is made to the Siwalik fauna, no notice is taken of any of the additions made to it since Falconer's time, though many of them were published before 1878.

The succeeding remarks bear reference to some of the more striking of the omissions and errors occurring in the part of the work under consideration (vol. ii.).

P. 136.—When treating of the *Lepitosteids* no mention is made of the occurrence of several genera of this group in the Gondwana rocks of India, and of their being possibly older than their European representatives.

P. 169.—It would surely have been well to have made mention of the occurrence of three species of *Ceratodus* in the probably triassic rocks of India.

P. 209.—The Indian genus *Parasuchus* (as yet undescribed) ought to have been referred to, when mentioning the division Parasuchia, of which it is the type.

P. 222.—We find the sentence, "*Dicynodon* and *Oudenodon* are known only from strata of supposed triassic age in India and South Africa." The inference from the above would be that both genera occur in India, whereas the former only has been found there.

P. 256.—"In the miocene and pliocene tertiary we have no remains of *Cursors* to notice." *Struthio asiaticus* of Milne Edwards is ignored.

P. 300.—No mention is made of any fossil species of *Manis*, though one was described from India in 1876.

P. 324.—We again meet with the old statement as to the "hexaprotodont" character of *Rhinoceros sivalensis*, although it was shown in 1876 that there was no ground on which such statement could be supported.

P. 346.—No mention is made of the Siwalik species of *Sus*, nor of the peculiar Siwalik genus *Hippohyus*. The well-known and widely-distributed genus *Lutridon* is not mentioned in the book. The very peculiar genus *Tetraconodon* (described in 1876) is also omitted.

P. 348.—The genus *Anthracotherium* is stated to be exclusively European, no mention being made of the Indian species described in the "Records of the Geological Survey of India" for May, 1877.

P. 349.—*Hyopotamus* is stated to occur only in the eocene and lower miocene; the Sind species, described in the above-quoted paper, being unnoticed.

Pp. 379-80.—The dentition of the elephant seems to be a source of stumbling to Prof. Nicholson. He observes: "The first three teeth of the grinder series, which would ordinarily represent premolars, are supposed to be milk-molars, as they have no predecessors or successors." If any inference could be drawn from the above, it would be that the teeth in question were true molars; it is on quite different grounds that these teeth are classed as milk-molars. In the next sentence we find: "None of the molars, in fact, undergo vertical displacement," and immediately afterwards it is stated that premolars occur in